A Study on the Prevalence and Management of Knee Joint Injuries Among Patients Attending Physiotherapy Centers in Misrata, Libya

Aymen M. Elgoneti[1], Fatima S. Abuhank[2], Fatima A. Shaklawon[3]

[1,2,3]Department of Physiotherapy, Faculty of Medical Technology, Misrata, Libya

Abstract - Background: The knee joint is among the most complex and heavily loaded joints in the human body, making it vulnerable to both acute and degenerative injuries. These injuries often impair mobility and quality of life, underscoring the importance of understanding their prevalence and management strategies.

Objective: This study aimed to determine the prevalence, typologies of knee joint injuries, as well as the management strategies commonly adopted among patients attending physiotherapy centers in Misrata, Libya.

Methods: A descriptive cross-sectional study was conducted between January and June 2024 across public and private physiotherapy centers in Misrata. A structured and validated questionnaire was administered to 110 adult patients presenting with knee injuries. Data were analyzed using SPSS version 28, employing descriptive statistics to summarize demographic, clinical, and management characteristics.

Results: Osteoarthritis was the most prevalent knee condition (55.5%), followed by ligament injuries (39.1%), meniscal tears (22.7%), and patellar fractures (8.2%). Females comprised 60% of the sample, and the most affected age group was 50–60 years (19.1%). Analgesic use before medical consultation was reported by 79.1% of participants, and 75.5% received physician-prescribed analgesics. Surgical intervention was advised for 60% of cases, with 50.9% undergoing surgery. Physiotherapy was initiated post-surgery in 59.1% of participants, and 88.2% reported functional improvement following physiotherapy.

Conclusion: Osteoarthritis and ligament injuries are the most common knee pathologies among physiotherapy patients in Misrata. Physiotherapy plays a pivotal role in rehabilitation and pain reduction, emphasizing its importance in comprehensive knee injury management.

Keywords: Knee injuries, Osteoarthritis, Physiotherapy, Libya, Prevalence, Pain management.

Introduction

The knee joint is one of the largest and most complex synovial articulations in the human body. It bears substantial mechanical load during weight-bearing activities and enables critical movements such as walking, climbing, jumping, and pivoting [1]. Its structural complexity — involving multiple ligaments (e.g., ACL, PCL, MCL, LCL), the menisci, articular cartilage, synovium, and the extensor mechanism — places it at risk under high biomechanical stress, trauma, repetitive micro-injury, or degenerative processes [2,3]. Because the knee is often subjected to both compressive and shear forces, even minor misalignments or weaknesses can predispose it to injury [4].

Common knee pathologies include ligament tears (especially anterior cruciate ligament [ACL] and medial collateral ligament), meniscal tears, patellar fractures or dislocations, and degenerative changes such as osteoarthritis [5]. These conditions frequently manifest as pain (particularly during movement), joint swelling, mechanical symptoms (catching, locking), crepitus, instability, and reduced mobility, all of which impair function and quality of life. Without timely diagnosis and management, knee injuries may progress, accelerate cartilage wear, and evolve into chronic degeneration [6].

Epidemiological studies worldwide show varying prevalence rates of knee injuries depending on population, age, activity level, and healthcare access. In the Middle East and North Africa region, knee osteoarthritis and degenerative knee disease represent a major burden, with increasing prevalence related to aging populations, obesity, and other comorbidities [7]. In Libya, prior studies have explored knee osteoarthritis in clinical settings, noting female predominance and strong associations with obesity [8]. Other studies called attention to examining knee osteoarthritis specifically among older adults focusing on educational programs for better outcomes [9]. However, there is a paucity of data specifically focused on the full spectrum of knee injuries (traumatic, degenerative, meniscal, ligamentous) among patients who are already seeking physiotherapy care.

Understanding injury patterns, prevalence, and associated risk factors in a physiotherapy-attending population is critical, as this group may represent more symptomatic or advanced cases compared to the general population. Additionally, examining the management strategies (especially the role of physiotherapy) adopted by these patients offers insight into treatment-seeking behavior, barriers, and therapy outcomes.

DOI:10.5281/zenodo.17870784

Therefore, the aim of this study was to determine the prevalence and types of knee joint injuries among patients attending physiotherapy centers in Misrata, Libya, and to identify associated risk factors and management behaviors.

2. Methods

2.1 Study Design, Setting, and Population

This investigation employed a descriptive cross-sectional design, conducted between January and June 2024 in Misrata, Libya. The study was carried out across multiple public and private physiotherapy clinics to capture a representative sample of patients seeking rehabilitation for knee problems.

Inclusion/exclusion criteria

Participants were included if they were adults aged 18 years or older presenting with knee symptoms or a prior diagnosis of knee pathology, including traumatic, degenerative, or mechanical conditions. Eligible participants were either currently attending or referred to physiotherapy in Misrata and were willing and able to provide informed consent and complete the survey.

Exclusion criteria comprised patients who had undergone major knee surgery more than 10 years prior, to minimize recall and selection bias, as well as individuals with systemic rheumatologic conditions (e.g., rheumatoid arthritis) or musculoskeletal complaints not primarily related to the knee. Questionnaires that were incomplete or illegible were also excluded from analysis.

Ethical Statement

Ethical approval was obtained from the Physiotherapy Department, Faculty of Medical Technology (Misrata), and all participants provided written informed consent prior to data collection.

Sample Size and Sampling Strategy

Based on preliminary clinic data and assuming a knee injury prevalence of approximately 50%, using a 95% confidence level and 10% margin of error, the calculated minimum sample size was approximately 96 participants. To account for nonresponse or data exclusion, we invited 113 participants to this study. Ultimately, 113 questionnaires were distributed, and 110 valid responses were retained for analysis, yielding a 97.3% response rate. A convenience sampling approach was used, recruiting eligible participants consecutively as they presented in the participating physiotherapy clinics during the study period.

Study Questionnaire

Data were collected using a structured, pretested, self-administered questionnaire developed by the principal investigator. The questionnaire was developed in Arabic to ensure clarity. A pilot test was performed on 15 patients (not included in final sample) to assess comprehension, clarity, and average completion time; minor wording adjustments were made accordingly.

The questionnaire included the following sections:

Demographics: age, sex, occupation, body weight, height (to compute BMI), comorbidities (e.g. hypertension, diabetes, osteoporosis).

Injury history and profile: whether a history of knee injury exists, classification as chronic vs acute, cause (sports, trauma, overuse), duration, stage (early vs advanced), affected structures (ligament, meniscus, osteoarthritic changes, fracture), reported symptoms (pain during movement, pain at rest, ability to flex/extend, crepitus).

Management and treatment behaviors: analgesic use (self-medication, physician prescription), duration of analgesic use, whether surgery was advised or performed, reasons for not undergoing surgery, whether physiotherapy was initiated (post-injury or post-surgery), physiotherapy completion, and subjective improvement after therapy

Each categorical variable was coded (e.g., yes = 1, no = 0; categories for injury types). Continuous variables (e.g. age, weight) were summarized, though most analyses involved categorical grouping.

Data Collection Procedure

Data were collected in person at the participating physiotherapy clinics. A trained research assistant approached eligible patients, explained the study, obtained consent, and provided the questionnaire to be completed in a private room. The assistant reviewed the completed questionnaire for missing or ambiguous responses and, when feasible, clarified discrepancies with the participant before accepting the form.

To minimize recall bias, the questionnaire was structured with anchored timelines (e.g., “In the past 12 months,” “initial injury date if known”) and prompts to aid recall. Participants were assured of confidentiality and anonymity to reduce social desirability bias.

Statistical Analysis

Data entry and analysis were conducted using IBM SPSS Statistics version 28. After data cleaning and consistency checks, descriptive statistics were performed. Frequencies and percentages were computed for categorical variables (e.g. sex, injury types, management behaviors). Means and standard deviations (or medians and interquartile ranges, if non-normally distributed) were used to describe continuous variables (e.g., age, weight). The primary aim of this study was descriptive; therefore cross-tabulations (χ^2 tests) and bivariate analyses were not performed. All results were reported in tables and text per reporting guidelines for

medical journals. Missing data were handled by case-wise deletion (i.e., analyses only included participants with complete data for given variables).

3. Results

3.1 Demographic Characteristics

The study included 110 participants, of whom 60% were females and 40% were males. The most represented age group was 50–60 years (19.1%), followed by 60–70 years (17.3%). The majority of participants were unemployed (39.1%), students (17.3%), or self-employed individuals (15.5%). Additionally, 61.8% of participants weighed ≥80 kg, suggesting a predominance of overweight or obese individuals among the sample (Table 1).

Table 1. Demographic Characteristics (n=110)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	<20	7	6.4
	20–<30	33	30
	30–<40	14	12.7
	40–<50	8	7.3
	50–<60	21	19.1
	60–<70	19	17.3
	70–<80	8	7.3
Gender	Male	44	40
	Female	66	60
Occupation	Unemployed	43	39.1
	Student	19	17.3
	Teacher	12	10.9
	Self-employed	17	15.5
	Healthcare workers	6	5.4
	Retired	2	1.8
	Others (driver, accountant, technician, etc.)	11	10
Weight (kg)	50–<60	7	6.4
	60–<70	14	12.7
	70–<80	21	19.1
	≥80	68	61.8

3.2 Injury Profile

A total of 70.9% of participants had a history of knee injury, with an identical proportion reporting chronic (old) injuries. The most common knee conditions were osteoarthritis (55.5%), ligament injuries (39.1%), meniscal tears (22.7%), and patellar fractures (8.2%). Pain during movement was highly prevalent (71.8%), while 65.5% described their pain as tolerable. Furthermore, 83.6% reported crepitus on movement, and 90.9% had visited an orthopedic specialist for evaluation. Almost half (48.2%) attributed their injuries to sports activity, and 56.4% of cases were in the early stage of joint degeneration (Table 2).

Table 2. Injury Profile

Variable	Category	Frequency (n)	Percentage (%)
History of knee injury	Yes	78	70.9
	No	32	29.1
Injury chronicity	Chronic (old)	78	70.9
	Acute (Recent)	32	29.1
Difficulty in knee flexion	Yes	72	65.5
	No	38	34.5
Difficulty in knee extension	Yes	55	50
	No	55	50
Pain during movement	Yes	79	71.8
	No	31	28.2
Pain at rest	Yes	49	44.5
	No	61	55.5
Audible knee crepitus	Yes	92	83.6
	No	18	16.4
Visited orthopedic doctor	Yes	100	90.9
	No	10	9.1
Ligament injury	Yes	43	39.1
	No	67	60.9
Joint friction (osteoarthritic changes)	Yes	61	55.5
	No	49	44.5
Meniscus injury	Yes	25	22.7
	No	85	77.3
Fracture of patella	Yes	9	8.2
	No	101	91.8
Injury due to sports activity	Yes	53	48.2
	No	57	51.8

Risk factors and Management Strategies

Analgesic use was highly prevalent, with 79.1% of participants reporting self-administration before seeking medical advice. A further 75.5% were prescribed analgesics by physicians. Surgical intervention was advised for 60% of the participants, of whom 50.9% proceeded with surgery. The main barriers to surgical treatment included fear (48.2%) and financial limitations (47.3%). Physiotherapy was initiated immediately post-surgery in 59.1% of patients, and 88.2% reported noticeable improvement following physiotherapy sessions (Table 3).

Table 3. Management Strategies

Variable	Category	Frequency (n)	Percentage (%)
Chronic diseases (HTN/DM)	Yes	31	28.2
	No	79	71.8
Osteoporosis	Yes	15	13.6
	No	95	86.4
Medication use for pain relief	Yes	87	79.1
	No	23	20.9
Used analgesics before seeing doctor	Yes	58	52.7
	No	52	47.3
Duration of analgesic use	Short-term	56	50.9
	Long-term	54	49.1
Doctor prescribed analgesics	Yes	83	75.5
	No	27	24.5
Advised surgery by doctor	Yes	66	60
	No	44	40
Underwent surgery	Yes	54	49.1
	No	56	50.9
Reason for avoiding surgery	Financial	52	47.3
	Fear	53	48.2
	Health condition	5	4.5
	No	88	80
Referred to physiotherapy post-injury	Yes	63	57.3
	No	47	42.7
Started physiotherapy post-surgery	Yes	65	59.1
	No	45	40.9
Improved after physiotherapy	Yes	97	88.2
	No	13	11.8
Physiotherapy advised by	Doctor	97	88.2
	Others	13	11.8
Completed full course of physiotherapy	Yes	78	70.9
	No	32	29.1

4. Discussion

This cross-sectional study examined the prevalence, characteristics, and management of knee joint injuries among patients attending physiotherapy clinics in Misrata, Libya. The findings highlight a high prevalence of chronic knee conditions, a predominance of osteoarthritic and ligamentous injuries, and widespread reliance on analgesic medications before seeking professional medical care.

Prevalence and Demographic Correlates

This study found that knee joint pain and injuries were reported more frequently among females than males. The predominance of female participants and the high representation of middle-aged and older adults in studies of knee pathology are well-documented in the literature. For instance, Al-Arfaj et al.[10] in Saudi Arabia reported that radiographic knee osteoarthritis (OA) was observed in 60.9% of females and 53.3% of males, highlighting a higher prevalence among women. Although a recent Libyan study found a high prevalence of musculoskeletal pain, including knee pain, among both genders [11], Althomali et al.[12] reported that women had a significantly higher prevalence of symptomatic knee OA compared to men (20.3% vs. 13.1%).

The predominance of female participants and the high representation of middle-aged and older adults align with existing literature indicating a higher burden of knee pathology among women and older populations [10]. Hormonal influences, differences in musculoskeletal structure, and greater lifetime mechanical load on the knee joint have been suggested as contributing factors [13]. Additionally, the high proportion of overweight individuals (61.8%) is a notable risk factor, consistent with findings that obesity significantly increases knee joint load and predisposes individuals to degenerative changes [2].

The occupational distribution, particularly the high prevalence among unemployed and self-employed, may reflect sedentary lifestyle as well as risky positions such as consistent squatting, kneeling, and weight-bearing tasks that are common in domestic activities, which have been identified as significant contributors to knee injury and osteoarthritis development [14].

Collectively, the observed demographic patterns, including female predominance, older age, overweight status, and certain occupational exposures, reflect well-established risk factors for knee pathology. These findings highlight the multifactorial nature of knee disorders, suggesting that biological, lifestyle, and occupational factors altogether contribute to the higher burden of knee pain and osteoarthritis in this population.

Injury Patterns and Pain Characteristics

The prevalence of knee osteoarthritis (55.5%) and ligament injuries (39.1%) observed in this study corresponds with findings from regional studies. For instance, Almaawi et al.[15] reported ligamentous and meniscal injuries as leading causes of knee pain among young adults in Saudi Arabia. Similarly, a recent Jordanian study reported a comparable pattern of ligament and meniscus injuries among patients presenting with knee pain [16].

The high rate of chronic or old injuries (70.9%) suggests delays in diagnosis and treatment, possibly due to limited awareness, access barriers, or financial constraints in the Libyan healthcare system. Chronicity is known to exacerbate degenerative changes, increasing the likelihood of osteoarthritic progression [5]. Pain during movement (71.8%) and frequent reports of crepitus (83.6%) indicate significant functional compromise and likely cartilage degeneration.

Overall, these findings underscore a substantial burden of knee pathology in the studied population, with a notable prevalence of both acute ligament injuries and chronic degenerative changes. The high rates of delayed diagnosis, functional impairment, and cartilage-related symptoms highlight the urgent need for improved early detection, public awareness, and timely intervention strategies within the Libyan healthcare context.

Management Behavior

Several modifiable and non-modifiable risk factors were observed in this study. Chronic diseases (e.g., hypertension, diabetes) affected 28.2% of participants, and osteoporosis was reported by 13.6%. These comorbidities may contribute to slower healing and reduced physical resilience [17]. The data also emphasize a concerning pattern of self-medication: nearly 80% used analgesics before consulting a physician, highlighting a potential gap in pain management education and healthcare access especially among older adults [18].

Although 60% of participants were advised to undergo surgery, only half proceeded, mainly due to fear and financial limitations. This pattern parallels findings from low- and middle-income contexts where socioeconomic barriers impede surgical care utilization [19]. Encouragingly, 88.2% of participants reported improvement following physiotherapy, reinforcing the effectiveness of conservative management strategies for knee disorders. This high rate of improvement may also explain the elevated satisfaction levels among physiotherapy patients observed in previous studies [20]. Early physiotherapy intervention following knee injury or surgery has been shown to enhance functional recovery, reduce hospital admissions, and decrease the risk of chronic disability [21].

These findings highlight the complex interplay between comorbidities, self-management behaviors, and healthcare access in shaping knee disorder outcomes. While socioeconomic and personal barriers limit surgical uptake, the high effectiveness and satisfaction associated with physiotherapy underscore the critical role of early, conservative interventions in promoting functional recovery and reducing long-term disability.

Implications and Recommendations

The high prevalence of knee injuries and chronic degenerative changes among physiotherapy patients in Libya underscores the need for early detection and prevention programs. Interventions should prioritize education on safe movement patterns, strengthening programs, weight monitoring, and pain and fatigue management [22]. Moreover, improving patient access to physiotherapy and surgical services through public funding or insurance coverage could mitigate the progression of untreated injuries.

Healthcare professionals should also focus on multidisciplinary management, addressing modifiable risk factors (e.g., obesity, inactivity, delayed treatment) and incorporating patient education to reduce dependence on analgesics. National surveillance and longitudinal studies are warranted to clarify the epidemiological patterns of knee injuries in Libya and evaluate outcomes of different treatment pathways.

Study Limitations

This study has a number of limitations that should be considered when interpreting the findings. First, its cross-sectional design precludes establishing causal relationships between risk factors and knee pathology. Second, data were collected from physiotherapy clinics in Misrata, which may limit generalizability to other regions of Libya or populations not seeking physiotherapy care. Third, reliance on self-reported measures for pain, injury history, comorbidities, and management behaviors may introduce recall bias or reporting inaccuracies. Finally, the study did not assess long-term outcomes of interventions, limiting insights into sustained functional improvements or progression of knee pathology. Future studies should address these limitations through longitudinal designs, broader geographic sampling, and incorporation of objective clinical assessments.

Conclusion

This study highlights a substantial burden of knee pathology

among physiotherapy patients in Misrata, Libya, with high prevalence of osteoarthritis, ligament injuries, and chronic or untreated conditions. Female gender, older age, overweight status, occupational exposures, and comorbidities such as hypertension, diabetes, and osteoporosis emerged as important risk factors, reflecting the multifactorial nature of knee disorders. Early and structured physiotherapy interventions demonstrated high effectiveness and patient satisfaction, underscoring the critical role of conservative management in improving functional outcomes and reducing long-term disability. These findings emphasize the need for early detection, patient education, lifestyle interventions, and improved healthcare access, alongside national surveillance and longitudinal studies to inform evidence-based strategies for the prevention and management of knee injuries in Libya.

References

1. Zhang L, Liu G, Han B *et al.* Knee Joint Biomechanics in Physiological Conditions and How Pathologies Can Affect It: A Systematic Review. *Applied Bionics and Biomechanics* 2020;**2020**:7451683.

2. Blagojevic M, Jinks C, Jeffery A *et al.* Risk factors for onset of osteoarthritis of the knee in older adults: a systematic review and meta-analysis. *Osteoarthritis and Cartilage* 2010;**18**:24–33.

3. Jahan A, Dmitrievna M, Ismayilova M. Development and preliminary validation of a new protocol for postoperative rehabilitation of partial meniscectomy. *Journal of Human Sport and Exercise* 2018;**13**:577–600.

4. Tsai L-C, Scher IS, Powers CM. Quantification of Tibiofemoral Shear and Compressive Loads Using an MRI-Based EMG-Driven Knee Model. 2013, DOI: 10.1123/jab.29.2.229.

5. Snoeker B, Turkiewicz A, Magnusson K *et al.* Risk of knee osteoarthritis after different types of knee injuries in young adults: a population-based cohort study. 2020, DOI: 10.1136/bjsports-2019-100959.

6. Pelletier J-P, Paiement P, Dorais M *et al.* Risk factors for the long-term incidence and progression of knee osteoarthritis in older adults: role of nonsurgical injury. *Therapeutic Advances in Chronic Disease* 2023;**14**:20406223231169715.

7. Shamekh A, Alizadeh M, Nejadghaderi SA *et al.* The Burden of Osteoarthritis in the Middle East and North Africa Region From 1990 to 2019. *Front Med* 2022;**9**, DOI: 10.3389/fmed.2022.881391.

8. Alfadli MM, Lawgaly SA, Ihmaidat H *et al.* The Magnitude Of Knee Osteoarthritis In Benghazi Medical Center, Libya. *Osteoarthritis and Cartilage* 2023;**31**:S255.

9. Jahan A. Randomised controlled trial of the effects of a self-management patient education program on overall quality of life and knee pain of older people with mild to moderate knee(s) osteoarthritis. *Int J Clin Trials* 2017;**4**:80–7.

10. Al-Arfaj A, Al-Boukai AA. Prevalence of radiographic knee osteoarthritis in Saudi Arabia. *Clin Rheumatol* 2002;**21**:142–5.

11. Jahan AM, Rwaiha AE, Anaiba SM *et al.* Cross-Cultural Validation of the Arabic Short-Form McGill Pain Questionnaire (SF-MPQ): Libyan Version in Patients With Musculoskeletal Pain. *Advances in Rehabilitation Science and Practice* 2024;**13**:27536351241233917.

12. Althomali OW, Amin J, Acar T *et al.* Prevalence of Symptomatic Knee Osteoarthritis in Saudi Arabia and Associated Modifiable and Non-Modifiable Risk Factors: A Population-Based Cross-Sectional Study. *Healthcare (Basel)* 2023;**11**:728.

13. Tosi LL, Templeton K, Pennington AM *et al.* Influence of Sex and Gender on Musculoskeletal Conditions and How They Are Reported. *J Bone Joint Surg Am* 2024;**106**:1512–9.

14. Palmer KT. Occupational activities and osteoarthritis of the knee. *Br Med Bull* 2012;**102**:147–70.

15. Almaawi A, Awwad W, Bamugaddam A *et al.* Prevalence of knee injuries among male college students in Riyadh, Kingdom of Saudi Arabia. *Journal of Orthopaedic Surgery and Research* 2020;**15**:126.

16. Khasawneh MH, Jaradat JH, Alkhawaldeh IM *et al.* Epidemiological trends of knee injuries in Al-Karak, Jordan: MRI based cross-sectional study. 2025.

17. Calders P, Van Ginckel A. Presence of comorbidities and prognosis of clinical symptoms in

knee and/or hip osteoarthritis: A systematic review and meta-analysis. *Seminars in Arthritis and Rheumatism* 2018;**47**:805–13.

18. Jahan AM. Insight into functional decline assessment in older adults: A physiotherapist's perspective. *Archives of Gerontology and Geriatrics Plus* 2024;**1**:100048.

19. Hoy DG, Smith E, Cross M *et al.* The global burden of musculoskeletal conditions for 2010: an overview of methods. *Annals of the Rheumatic Diseases* 2014;**73**:982–9.

20. Jahan AM, Rwaiha AE, Gusaibat SR *et al.* Patient Satisfaction With Physiotherapy Services in Libya: A Cross-Sectional Study. *Journal of Patient Experience* 2021;**8**:1–7.

21. Konnyu KJ, Thoma LM, Cao W *et al.* Rehabilitation for Total Knee Arthroplasty: A Systematic Review. *Am J Phys Med Rehabil* 2023;**102**:19–33.